But this is the same chance as that which was found above in different terms. Equating the two, we have

$$\frac{p!\, m(abc\ldots)}{l^p}=\frac{n!(p-1)!}{(n-p)!(n+p-1)!}.$$

Hence, $m(abc\ldots)=\dfrac{l^p.n!(p-1)!}{p!(n-p)!(n+p-1)!}$.

For the case $p=n$ this value reduces to $\dfrac{l^n(n-1)!}{(2n-1)!}$, the mean value of the product of the n segments of the line. This result agrees with that found by Mr. Crofton in the solution of the latter problem in the Encyclopedia Britannica, Vol. XIX, p. 784.

This solution should have appeared instead of the solution published last month. Both solutions were received before the last issue went to press. By an oversight the defective solution got in with the material for publication. Ed. F.

170. Proposed by LON C. WALKER, Santa Barbara, Cal.

Find the area of a triangle formed by drawing a line at random through each of three points taken at random within a given triangle.

No solution has been received.

174. Proposed by J. EDWARD SANDERS, Reinersville, Ohio.

A chord of length C is drawn at random in a given ellipse. What is the average area of the segment cut off by the chord?

Solution by G. B. M. ZERR, A. M., Ph. D., Parsons, W. Va.

Refer the ellipse to conjugate diameters so that $x^2/m^2+y^2/n^2=1$ is its equation.

$$\text{Area of segment}=\frac{2n}{m}\sin\omega\int_{(m/2n)\sqrt{(4n^2-c^2)}}^{m}\sqrt{(m^2-x^2)}dx$$

$$=mn\sin\omega\left[\cos^{-1}\left(\frac{\sqrt{(4n^2-c^2)}}{2n}\right)-\frac{c\sqrt{(4n^2-c^2)}}{4n^2}\right]$$

$$=ab\left[\cos^{-1}\left(\frac{\sqrt{(4n^2-c^2)}}{2n}\right)-\frac{c\sqrt{(4n^2-c^2)}}{4n^2}\right]=A.$$

ω is the inclination of m, n.

$$\text{Average area is }\triangle=\frac{\int_b^a A\,dn}{\int_b^a dn}.$$